

## Amendments to the Claims

1. (currently amended) A method for processing radio frequency (RF) signals in a multi-antenna system, comprising:

- generating  $L_t$  input data streams in a transmitter, ~~where  $L_t$  is an integer~~ with  $t$  transmit antennas, where  $t$  is an integer, and where  $L_t$  is an integer less than or equal to  $t$ ;
- modulating the  $L_t$  input data streams to RF signals;
- switching the RF signals to  $t$  RF branches, ~~where  $t$  is an integer and  $t \geq L_t$ ;~~
- applying a phase-shift transformation to the RF branches by a  $t \times t$  matrix multiplication operator  $\Phi_1$ , whose output are  $t$  RF signals, and in which entries of the matrix  $\Phi_1$  have constant modulus phase-only terms and the modulus phase-only terms adapt to an estimate of an average channel state;
- transmitting the  $t$  RF signals over a channel by the  $t$  transmit antennas;
- receiving the transmitted signals ~~by  $r$  antennas~~ in a receiver with  $r$  receive antennas, where  $r$  is an integer;
- applying a phase-shift transformation to the  $r$  RF signals by a  $r \times r$  matrix multiplication operator  $\Phi_2$  to generate  $r$  streams;
- selecting  $L_r$  ~~branches~~ signal streams from the  $r$  streams, where  $L_r$  is an integer less than or equal to  $r$ ;
- demodulating the  $L_r$  signal streams; and
- processing the demodulated  $L_r$  signal streams in baseband to recover output data streams corresponding to the input data streams.

1 2. (original) The method of claim 1, in which each of the  $L_t$  input data stream has a  
2 weight, and further comprising:  
3 summing the  $L_r$  weighted data streams before the demodulating and  
4 decoding.

1 3. (original) The method of claim 1, in which the  $L_t$  input data streams are  
2 generated by a space-time block coder.

1 4. (original) The method of claim 1, in which the  $L_t$  input data streams are  
2 generated by a space-time trellis coder.

1 5. (original) The method of claim 1, in which the input data streams are space-time  
2 layered structures.

1 6. (original) The method of claim 1, in which  $t = L_t$ , and the matrix  $\Phi_1$  is an  
2 identity matrix.

1 7. (original) The method of claim 1, in which  $r = L_r$ , and the matrix  $\Phi_2$  is an  
2 identity matrix.

8. (canceled)

1 9. (original) The method of claim 1, in which entries of the matrix  $\Phi_2$  have  
2 constant modulus phase-only terms.

1 10. (original) The method of claim 1, in which entries of the matrices  $\Phi_1$  and  $\Phi_2$   
2 have constant modulus phase-only terms.

1 11. (currently amended) The method of ~~claim 8~~ claim 1, in which the phase-only  
2 terms adapt to an estimate of an instantaneous channel state.

12. (canceled)

1 13. (original) The method of claim 1, in which the matrix  $\Phi_1$  is a fast Fourier  
2 transform matrix.

1 14. (original) The method of claim 1, in which the matrix  $\Phi_2$  is a fast Fourier  
2 transform matrix.

1 15. (original) The method of claim 1, in which the matrices  $\Phi_1$  and  $\Phi_2$  are fast  
2 Fourier transform matrices.